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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/721,615 | 11/24/2003 | Kenichiro Ueda | NGW-014 | 5617 |

959 7590 04/04/2006

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BOSTON, MA 02109

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| EXAMINER |
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LEWIS, BEN

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,615

Applicant(s)

UEDA ET AL.

Examiner

Ben Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/10/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshizumi et al. (U.S. Pub. No. 2002/0094469 A1).

With respect to claim 1, Yoshizumi et al disclose an onboard fuel cell system and method of discharging hydrogen-off gas wherein the fuel cell is supplied with hydrogen gas and oxidative gas, generates electric power using the hydrogen gas and the oxidative gas, and discharges hydrogen-off gas and oxygen-off gas that have been consumed (Paragraph 0011). The hydrogen gas that has thus been supplied is consumed for the electrochemical reactions in the fuel cell **100**, turns into hydrogen-off gas, and is discharged to the circulation flow passage **403** (Paragraph 0052). Then, hydrogen gas that has been discharged from the shut valve **414** flows through the exhaust flow passage **407**, is delivered to the oxygen-off gas exhaust flow passage **503**, and is mixed with oxygen-off gas flowing through the oxygen-off gas exhaust flow passage **503** in the mixing portion **411**. Because hydrogen gas discharged from the shut valve **414** is hydrogen-off gas, the concentration of hydrogen is relatively low.

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Also, oxygen-off gas discharged from the fuel cell **100** is also nitrogen-rich gas that has been removed of oxygen in the fuel cell **100**. Accordingly, if hydrogen-off gas is thus mixed with oxygen-off gas and diluted, the concentration of hydrogen contained in the mixed gases is further reduced (Paragraph 0058). However, it is possible to dispose a hydrogen concentration sensor or the like in the hydrogen gas flow passage, detect the concentration of hydrogen in circulating hydrogen gas, and open the shut valve **414** if the concentration drops below a reference concentration (Paragraph 0057).

With regard to the hydrogen concentration calculating unit Yoshizumi et al teach that the shut valve **414** is disposed in the exhaust flow passage **407** that branches off from the circulation flow passage **403**. If the concentration of impurities in circulating hydrogen gas is increased, the control portion **50** opens the shut valve **414** so as to discharge part of the circulating hydrogen gas that contains impurities. Thereby, part of the hydrogen gas containing the impurities is discharged from the circulation passage, and pure hydrogen gas is introduced correspondingly from the hydrogen-occluding alloy tank **200** (Paragraph 0055).

With respect to claim 2, Yoshizumi et al teach that circulation of hydrogen-off gas can prevent impurities contained in oxidative gas such as oxygen and the like from piling up and that the output voltage of the fuel cell **100** can be prevented from dropping. The control portion **50** controls the driving of the pump **410**, and the pump **410** changes the flow rate of hydrogen-off gas flowing through the circulation flow passage **403** in

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accordance with the amount of consumption of electric power generated by the fuel cell 100 (Paragraphs 0114 and 0115).

With respect to claim 3, Yoshizumi et al teach that shut valve 414 is disposed in the exhaust flow passage 407 that branches off from the circulation flow passage 403. If the concentration of impurities in circulating hydrogen gas is increased, the control portion 50 opens the shut valve 414 so as to discharge part of the circulating hydrogen gas that contains impurities. Thereby, part of the hydrogen gas containing the impurities is discharged from the circulation passage, and pure hydrogen gas is introduced correspondingly from the hydrogen-occluding alloy tank 200. Thus, the concentration of the impurities in hydrogen gas is reduced. Conversely, the concentration of hydrogen is increased. As a result, the fuel cell 100 can generate electric power continuously and suitably. Although the interval at which the shut valve 414 is opened differs depending on the operational condition or the output, the shut valve 414 may be opened, for example, at intervals of about 5 seconds.

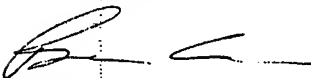
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ben Lewis



Patent Examiner
Art Unit 1745



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER